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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,117	01/05/2004	Fabian Wenger	4114-9	1361
23117 7590 12/18/2006 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER FLORES, LEON	
			ART UNIT	PAPER NUMBER
			2635	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/18/2006	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/751,117

Applicant(s)

WENGER ET AL.

Examiner

Leon Flores

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/5/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 7, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Weigand (US Patent 5,117,441).

Re claim 1, Weigand discloses a method in a wireless communication system of providing timing information for a received transmit signal (See Fig. 1: element 100, col. 3, lines 21-36), comprising:

providing on a receiving side a training signal relating to a known signal portion of the transmit signal (Fig. 1: element 105, col. 3, line 23);

scaling the training signal (see col. 3, lines 24-26);

quantizing the scaled training signal (see col. 2, lines 65-68, col. 3, lines 24-26, in Weigand, it is inherent that digital signal processing i.e. DSP during the encoding stage of the training sequence involves quantization);

correlating one or more parts of the received transmit signal with the scaled training signal to obtain one or more correlation results (See Fig. 1: element 104 & col. 3, lines 20-29); and

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determining the timing information on the basis of the correlation results (see col. 3, lines 20-29)

Re claim 2, Weigand teaches the method according to claim 1, further comprising varying a scaling factor to control a correlation complexity (col. 3, lines 24-26, in Weigand, it is inherent that in order for proper correlation to occur, the training sequences must be scaled and mapped as claimed).

Re claim 7, Weigand discloses the method according to claim 1, wherein the provided timing information is an optimum timing instant for synchronization purposes (See col. 3, line 64 – col. 4, lines 1-6 and 29-31).

Claim 14 has been analyzed and rejected in view of claim 1 above. Furthermore, the reference of Weigand pertains to a processor-based TDMA communications system (col. 2, lines 65-68, col. 4, lines 57-59). Hence, implementing a program product is inherent and necessary as the cited disclosure suggests.

Claim 15 has been analyzed and rejected in view of claim 14 above. Weigand also discloses hardware implementation (see col. 4, lines 57-59).

Claim 16 is a system claim comprising elements that would have necessitated the corresponding steps in method claim 1. Therefore, this claim has been analyzed and rejected in view of claim 1 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims (3-6) & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand (US Patent 5,117,441), as applied to claims 1 and 16 respectively, and further in view of applicant's admitted prior art (specification, p. 3, lines 10-25, hereinafter, "prior art").

Re claim 3, Weigand fails to explicitly disclose "the training signal comprises complex training values and wherein a real part and an imaginary part of each training value are quantized jointly" as claimed. However, the admitted prior art does in order to

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reduce the overall complexity of the matched filter during correlation processing (specification, p. 3, lines 10-25).

Taking the combined teachings of Weigand and the applicant's admitted prior art as a whole, it would have been obvious to one of ordinary skill in the art to apply joint quantization of the real and imaginary parts of each complex training value in order to reduce the overall complexity of the matched filter during correlation processing (admitted prior art, in spec. p. 3, lines 10-25).

Re claim 4, the combination of Weigand and applicant's admitted prior art teaches the method according to claim 3, wherein, during quantization, the training values are mapped on a predefined set of pure real and pure imaginary values (admitted prior art, specification p. 3, line 15-21).

Re claim 5, the combination of Weigand and applicant's admitted prior art teaches that wherein the predefined set of pure real and pure imaginary values comprises a value zero (admitted prior art, specification p. 3, line 15-21).

Re claim 6, the combination of Weigand and applicant's admitted prior art teaches wherein the scaling factor is varied to adjust the number of training values mapped on the value zero (Weigand, see col. 3, lines 34-26, where he teaches that the training sequences are scaled and mapped for proper correlation).

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Claim 17 is a system claim corresponding to method claim 3. Hence, the steps in method claim 3 would have necessitated the elements in system claim 17 as claimed. Therefore, claim 17 has been analyzed and rejected w/r to claim 3 above.

Claims (8-13) & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand (US Patent 5,117,441), as applied in claims 1 and 16 above respectively, and further in view of Piirainen et al (US Patent 6,144,709).

Re claim 8, Weigand discloses the method according to claim 1, but fails to teach that wherein the one or more parts of the receive signal are correlated with the scaled training signal by means of a matched filter. However, Piirainen et al does. (See col. 1, lines 9-14 & col. 3, lines 30-32.)

Piirainen et al disclose a method of detecting a call set-up burst in a digital radio system in which a call is set up in a predetermined time slot by a certain call set-up burst which comprises a known training sequence. The position and energy of the maximum point of an impulse response in a time slot are estimated by correlating a sampled, received signal with a known training sequence and computing the average energy of the maximum point of the impulse response per one correlation result. Subsequently, computing the ratio between the averaged maximum energy of the impulse response and the average energy of the other samples of the time slot, and it

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the ratio is higher than a given threshold, it will decide if a call set-up burst was received in the time slot concerned.

Taking the combined teachings of Weigand and Piirainen et al as a whole, it would have been obvious to one of ordinary skill in the art to have incorporated a matched filter in the manner as claimed into the system of Weigand, as taught by Piirainen et al., for the benefit of determining if a call set-up message was received by computing the maximum point of the impulse response.

Claim 9 has been analyzed and rejected in view of claim 8 above.

Re claim 10, the combination of Weigand and Piiraninen et al disclose the method according to claim 9, wherein, for each possible timing instant, a channel impulse response signal power contained in a respective time window of the received transmit signal is determined. (In Piiraninen et al., see col. 3, lines 28-55.)

Re claim 11, the combination of Weigand and Piiraninen et al disclose the method according to claim 10, wherein the step of determining the timing information on the basis of the correlation results comprises determining the time window containing the maximum signal power. (In Piiraninen et al., see col. 3, lines 28-55.)

Re claim 12, the combination of Weigand and Piiraninen et al disclose the method according to claim 10, wherein based on the maximum signal power a false

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alarm detection is performed. (In Piiraninen et al., see col. 3, lines 62-67 & col. 4, lines 1-4. By determining the maximum energy (impulse response) we can then compute the average energy by subtracting the maximum energy from the total energy. And by comparing the average energy with a predefined threshold, we can, therefore, estimate if a call set-up message was received. Furthermore, one skilled in the art would know that during the search mode there may be false alarm that occur at the designed false alarm rate of the system. To handle the occasional false alarms, it is necessary to have an additional method or circuit that checks to confirm that the received signal at the output of the correlator remains above the threshold.)

Re claim 13, the combination of Weigand and Piiraninen et al disclose the method according to claim 12, wherein the false alarm detection comprises comparing the maximum signal power with a signal power threshold. (In Piiraninen et al., see col. 3, lines 62-67 & col. 4, lines 1-4.)

Claim 18 is a system claim corresponding to method claim 12. Hence, the steps in method claim 12 would have necessitated the elements in system claim 18 as claimed. Therefore, claim 18 has been analyzed and rejected w/r to claim 12 above.

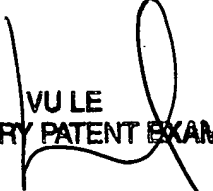
Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-270-1195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
November 29, 2006


VU LE
SUPERVISORY PATENT EXAMINER